

Long-term training policy urged for 16-19 group

by Frances Gibb

A comprehensive long-term programme of education and training for the 16 to 19 age group has been called for by the Socialist Educational Association.

In a resolution submitted to the Labour Party conference in October, the association says it is alarmed by the lack of progress in the elimination of class, race or sex discrimination in post-school education and training.

It welcomes the quick implementation of the Eddland report, but adds that this was a result of short-term expediency to overcome unemployment, rather than any long-term plan.

A wide-ranging programme for this age group should include: a total review of the financial provision; provision of education, training and careers guidance; every local authority should prepare a plan and make such provision for 16 to 19s and make such provision for 16 to 19s and make such provision for 16 to 19s.

The association also calls on the Government to insist that colleges, universities and local authorities take immediate action to help the disadvantaged; for instance, by changing admissions criteria to take account of the social and educational background of applicants.

A system of paid educational leave as a right for working people is called for in a resolution tabled by Peurtilh and the Border Constituency Labour Party.

It also calls on the Government to adjust the grant/fee support system to ensure greater equality

between age groups, giving help to those who have not made use of existing education facilities. Those undertaking retraining should have greater support through the Manpower Services Commission, it says.

Funds should also be provided for the National Advisory Council on adult education.

A third resolution, from West Derbyshire CLP, calls for legislation to permit special funds to be diverted for the education, training and re-training of post-school groups.

Both the Conservatives and Liberal parties are expected to concentrate on schools at their conferences. The Conservatives have now drawn up the final agenda from the list of submitted motions, which is to be published at the end of September. Higher education is not expected to be included.

On the original list, however, there were motions on various higher education issues such as tuition fees and the binary line.

The Liberal Party campaigner motion on education is also mainly on schools, although it contains a general statement deploring educational cuts. It says also that the operational surplus of teachers should be used to improve the overall teacher-pupil ratio.

On the school curriculum, it says that pupils should be prepared for the world of work and have practical training. The Union of Liberal Students has submitted an amendment saying that there should be opportunities for vocational training and that the curriculum should include political education.

Director sought to oversee teaching company scheme

by Clive Cookson
Science correspondent

The Science Research Council and the Department of Industry are looking for a director for their expanding teaching company scheme. According to advertisements in the national press this week, 31 teaching companies "have already been approved".

This statement seems a little premature, however, since only seven have actually been announced, and no one in the SRC was willing to give details of the programme to be settled with the firms and educational institutions—two universities and two polytechnics—involved.

The decision to advertise the post—salary negotiable but not less than £12,000 a year—confirms that the SRC and DoI are pressing ahead with plans to set up a small central body to coordinate the scheme. This was still under discussion when a £6m expansion plan

Councils check student union spending

by Sue Reid

Local authorities are planning to send a two-man "fire brigade" team into colleges and polytechnics this autumn to investigate spending of student unions.

A committee of the Education Officers has decided to monitor the spending of the local authority in polytechnics. They estimate that more than £10m is paid out each year by Government and local education authorities to student unions.

The committee, composed of education officers in polytechnics, is urging local authorities to take immediate action. The level of fees demanded by unions, it has called on the Secretary of Education and Science to take immediate action.

Mr Peter Stames, executive director of the Association of Local Authorities, said: "We have long been worried about these fees. It is a classic case of irresponsibility."

The advisory team, appointed in 1975, has been spending a great deal of time on this issue. It has already reported to the Secretary of Education and Science that it is a classic case of irresponsibility.

But a National Union of Students spokesman this week rejected the charge of irresponsibility. He said there were already 100,000 people in the country who were unemployed and that this often happened.

Mr James Hamilton, permanent secretary to the department and chairman of the steering committee, described the work of the review team as "a re-examination of the top management structure in the face of rapid and extensive educational change in the form of financial constraints, a decreasing school population and a growing public awareness of problems."

The review, one of a series affecting all Whitehall departments, assumes a continuation of the existing machinery of government. But it could well recommend a transfer of responsibility like the training of young people in which both the DES and the Manpower Services Commission play a part.

It has yet to be decided whether the schools inspectorate should be included within this exercise. The review team has been asked to advise the steering committee on the transfer of responsibility for unemployed 16-year-olds.

TUC calls for training boost

The Trades Union Congress has asked the Government for funds to help to establish a national trade union educational centre and to finance a "significant expansion in residential facilities for trade unionists."

Individual trade unions are not so well placed to expand their training programmes as the TUC believes, says the report. Developments in industrial democracy are creating new needs in trade union education.

Representatives from different plants within a company need to be brought together and some company policies will require courses involving representatives from several plants. In view of this, TUC needs to be significant expansion in residential facilities available to unionists."

Last year's grant went on the payment of course fees to public bodies providing day release courses, on teaching materials, course development at the TUC college, tutor training and on union residential courses of at least four days.

For this year the General Council asked the Government if it would also help to pay up to half the cost of union courses providing a minimum of 15 hours study hours, but the request was turned down.

In recent years about £10,000 a year has been going to the TUC for educational purposes from the EEC trade union information division. Following consultations this year with EEC officials, the TUC has now undertaken to use this money only in connexion with colleges "set in, or including, an EEC context".

Assuming an annual turnover of 20 per cent, the current figure, this will mean that 120,000 new representatives a year will need training. About 500 additional full-time tutors will be required. At present there are about 100.

TUC policy is to send members on courses organized by further education and advanced further education colleges, the Workers' Educational Association and some university extra-mural departments. It would like to establish departments

of trade union studies but recognizes that this will depend on the attitude of local education authorities.

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Eight point investigation of changing DES role

by Peter Hennessy

A committee of senior Civil Servants has begun a thoroughgoing review of the changing role of the Department of Education and Science, its relationship with Ministers, the rest of Whitehall and the local authorities in a period of economic austerity and public concern about education provision.

An eight-point agenda has been drawn up for the guidance of a Civil Service team who will provide the basis of the review. They have been instructed to produce a preliminary survey by the end of November.

The framework requires them to investigate: the objectives and functions of the department; its top organization and management; operational management on a week by week basis; financial control; manpower control; relations with local authorities, government departments and other organizations; in relationship with Ministers; and its relationship with HM Inspectorate of Schools.

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Mr James Hamilton

whether the work of the 450 inspectors should be examined alongside that of the 2,400 Civil Servants in the department.

Mr Hamilton, who conducted his own preliminary review on becoming permanent secretary last year and toured the divisions, with a particular emphasis on the planning side, wants the present exercise to consider criticisms of the DES made by the Organization for Economic Co-operation and Development in 1975 and by a sub-committee of the Commons Expenditure Committee in 1976. Both upbraided the department for excessive secrecy and inadequate future planning.

Mr Hamilton has invited Miss Janet Pook, Conservative MP for Plymouth, Drake, who chaired the Commons committee, to submit a paper to the review team.

In common with other ministers, the department intends to reply to the Prime Minister's recent injunction to greater openness by publishing a factbook in connection with internal policy reviews.

The review team will also examine the possibility of breaking traditional divisional boundaries by establishing ad hoc teams to carry out special projects. Financial control will also be high on the list of priorities. The department has a forecast budget of £7,394m for the current financial year.

There is a feeling too among senior officials that the effect of shrinking resources for education over so many years of increase, is that the department may need to play a more direct part in wider policy making and the allocation of priorities.

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Survey surprise on lecturers' attitudes to pay

by Frances Gibb

Two out of three academics think their earnings fair in the present economic climate, according to a National Opinion Polls *THIS* readership survey published this week. It shows that of a sample of university, polytechnic and college lecturers, 66 per cent consider their current earnings fair.

But there is a marked division of opinion between universities and polytechnics. Under half of university lecturers, 44 per cent, think their earnings fair compared with 69 per cent of polytechnic lecturers. In colleges of education the proportion is 65 per cent, while in colleges of further education it is 76 per cent.

A similar proportion is revealed by the proportions thinking their earnings are positively unfair. University lecturers are top with 50 per cent claiming earnings unfair compared with 25 per cent in polytechnics, 30 per cent in colleges of education and 20 per cent in further education.

The survey also shows that of those claiming their earnings are unfair 71 per cent do not know why. Only 28 per cent think they are the low—49 per cent in universities and 20 per cent in polytechnics.

The survey was conducted on the basis of interviews with 506 lecturers in England and Wales in both further and higher education between March and July this year and July last year with 253 in Scotland. Among its aims were to establish who the readers of *THIS* are; what their views are; what they read; what they think about educational journals in general and *The Times* supplements in particular.

It shows also that those contented with their earnings and those discontented are roughly equally divided between senior and junior lecturers. But engineering and technology lecturers, followed by science lecturers, feel hardest done by, with 38 per cent and 35 per cent respectively thinking earnings fair compared with 26 per cent of arts lecturers and 23 per cent of social scientists.

The proportion of senior to junior staff in further and higher education is 29 per cent to 71 per cent. Almost as many teach non-degree work, 47 per cent in degree work, 53 per cent, and 29 per cent have postgraduate degrees and 54 per cent degrees.

On major educational issues, they are conservative on organization and progressive on content. Over half 59 per cent favour a hierarchy of institutions with different functions as opposed to 28 per cent favouring comprehensive institutions with fairly uniform standards.

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OU union wants paedophile group chairman moved

by Sue Reid

Open University clerical staff are planning to call for the transfer of Mr Tom O'Carroll, the university press officer, because of his involvement with the controversial paedophile group, the National and Local Government Officers' Association of the University.

The union, which has 1,000 members, is to place a motion before its executive next week which calls on Sir Walter Perry, the vice-chancellor, to remove Mr O'Carroll, chairman of the NALGO, from any position which could bring him into contact with the national press.

The move follows the decision this week to take no further action against Mr O'Carroll. He would, said the university, be returning to work next month after extended leave.

A statement added: "The university does not support his views on paedophilia and must not be associated with them. Mr O'Carroll was made aware of the feelings of revulsion which many staff members have expressed against his opinions."

The NALGO motion expresses concern about Mr O'Carroll's recent statements in the national press. Mr O'Carroll was unavailable for comment this week.

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Malta students in exam exodus

Maltese medical students are leaving to take their final examinations in Britain because the bitter and long-running dispute between the Malta Government and the island's doctors has prevented them qualifying at home.

Thirty-two of the 39 final year medical students at the Royal University of Malta will be sitting the examinations of the Joint Board of the Royal College of Physicians and the Royal College of Surgeons in London on September 26.

Sir John Cross, chairman of the Scottish Council for Postgraduate Medical Education, who was appointed an external examiner by the Royal University of Malta, was not allowed to conduct oral and clinical examinations at the St Luke's teaching hospital this summer.

Eight students have already arrived in London and the rest will be flying in within the next three weeks. A BMA spokesman said the students seemed "unfazed" and did not know what they were going to do next.

Dr Vincent Mizzi, Maltese Health Minister, said the Government was not prepared to accept the students' return to Malta. "The social work staff made it clear he could not be employed and would not qualify."

NEXT WEEK

- BA president's address
- The *THIS* readership survey.
- Music at University College, Cardiff.
- Philip Abrams reviews four new books in the media.

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Row threatens poly course

by David Walker

The continuing row between three London boroughs and the North East London Polytechnic over a social work course could lead to 30 students accepted for the course becoming unemployed.

The boroughs of Newham, Waltham Forest and Haringey, which maintain the polytechnic, are committed to closing the College Certificate of Qualification in Social Work course. This would mean the dismissal of six teaching staff.

Now the 30 students, who resigned their jobs to take the course next month, face the prospect of looking for a college place elsewhere or joining the dole queue.

Last month the boroughs' joint education committee resolved that half the polytechnic staff be sacked immediately and the rest next year since they had refused to admit or employ of Newham's education welfare department for social work training.

The polytechnic authorities have formally accepted the students' plea. "We are anxious that the social work staff made it clear he could not be employed and would not qualify."

Students who have been accepted for the three-year course have been informed by NLEP that there is disagreement and that no final decisions will be made until September 9, when the joint education committee meets. At this late stage students would find it difficult to get alternative courses.

Social work staff have the support of the Central Council for Education and Training in Social Work which has insisted that if a student was retrained in accordance with its agreed procedures, they cannot be sacked either by the polytechnic authorities or the maintaining boroughs. It is understood CCESSW officials would assist the NLEP students find places on other courses.

Adapt the axel colleges-NUS

A big drive to find new ways of delivering education, especially in the form of residential facilities, is demanded by the National Union of Students in its annual report. The report says that the current system of education is "outdated and inefficient" and that the NUS will be "adapting the axel colleges-NUS".

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Euro-spaceman could be from British university

Keele University's adult education department is to mount a range of courses through which students will receive a diploma in space science.

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Evidence, clues and motives in science

There are many analogies that one can use to illustrate the way in which science advances. A little over a hundred years ago, a grandfather Thomas Huxley, in his presidential address to the meeting of the British Association at Liverpool, used the analogy of a military campaign. He described himself as being the captain of his eyes round the horizon of the scientific world, to report to his colleagues what could be seen from his watch-tower; in what directions the multitudes of men on the land were proving of natural knowledge; what important strongholds of the great enemy of all, ignorance, had been recently captured; and also, with due impartiality, to make known the advanced posts of science and to indicate, in a long-continued siege had made no progress.



In his presidential address to the British Association for the Advancement of Science, given at Aston University on Wednesday and printed in full below, Professor Sir Andrew Huxley suggests that science needs to go back on the offensive to protect itself against those who challenge the objectivity of scientific knowledge

This choice of a military analogy was in keeping with his pugnacious spirit, for although he described himself as a man of peace who never—well, hardly ever—entered into controversy but only remained in defence, there can be no doubt that he rebuffed a verbal battle. For example, when Gladstone published an article attacking the outrageous claim that the Book of Genesis is a long-continued siege had made no progress.

My own inclination has been to think of the progress of science as resembling the exploration of a newly discovered continent. Nature is there, not like an enemy resisting our advance, but waiting for us to find our way through her jungles and across her mountain passes.

In part, my choice of an analogy from peace rather than from war is a reflection of my more peaceful temperament, but I think it also reflects a difference between the position of science in his time and ours. In 1870, the scientific way of thinking or investigating a problem, was still struggling for recognition in its country. That battle was won, and subsequent generations, including my own, have reaped the benefit of our investigations without serious opposition, and have been granted high esteem by our contemporaries in other fields of human activity.

For most of my working life, I have taken it for granted, and have supposed that the battle of our century has been decided the issue once for all. But in the past few years, science as a whole—the scientific approach to questions of all kinds—has been increasingly under attack. Science, and the technical advances that have been made possible by the application of science, are made the scapegoats for everything that is going wrong in the world—the population explosion, the exhaustion of natural resources, and for the threat of war.

It is repeatedly suggested that the speed of scientific discovery since the Second World War has been slowed, and that scientists ought to suppress their discoveries that seem capable of being used to the detriment of humanity. Scientists whose findings contradict fashionable social theories are accused of distorting their results through methodical prejudice, and it is suggested that our scientific topics should be based on beliefs not on what is actually found to be the case, but on the supposed consequences of holding particular beliefs, in effect that we ought to replace science by wishful thinking.

Clues and evidence

We seem to be heading for a situation in which science as a whole has once again to fight for its position, as it did a hundred years ago, and the analogy of an enemy fighting against the great enemy of all, ignorance, may again become appropriate.

So perhaps we may say that the military analogy is appropriate for the advance or retreat of the whole of science as against non-scientific ways of thinking, while the analogy of exploration is appropriate for the increase of scientific knowledge and understanding. At the next lower level, that of an individual scientific investigation, it seems to me that a third analogy meets the case better, namely that of a detective, at any rate as depicted

In standard works of detective fiction of course is the source from which I chose at yester for this address. The distinction between clues and evidence is much the same in science as in detective activity, and just as important. Motive comes in rather differently, since there is nothing in a scientific investigation equivalent to the criminal in a detective novel; but it is no less important, whether we think of the motive which drives a scientist to do his work, or the motives for which others may try to discredit his conclusions.

Clues are indispensable in the earliest stages of an investigation, when one is trying to form a hypothesis which can be tested, or perhaps more often—when one is merely wondering in what directions or measurements in which the hope that they will suggest a hypothesis to us.

A clue is an observation which is relevant to the problem in hand, but which can be interpreted in more than one way. The investigator adapts one of these interpretations provisionally because he guesses that it has a fair chance of turning out to be right, and he tries to see what experiments by which to follow it up.

What is his basis for making these preliminary interpretations and for weighing them against each other? He has nothing to go on except generalizations that previous work has shown to be more or less valid in the field within which his problem lies. In other words, those might be some general ideas of conservation or of symmetry. In biology, I suppose the two widest are adaptation and evolution, and in my own field, an experimental biologist, one's first attempts at interpreting an observation are almost always based either tacitly or explicitly on one or both of these generalizations.

As regards adaptation, it is a matter of common observation, recognized at least since the time of Aristotle, that the structure of an organism is determined by its environment, and that the environment in turn is determined by the organism as a whole, or to some group of which the organism is a member. Hence if, for example, one is investigating the activity of some organ in an animal, there is an expectation that the organ will do something useful for the animal, and a guess as to what that something may be constitutes a hypothesis which can be followed up and tested by experiment.

Likewise, the well-founded belief in the common ancestry of all living things leads to an expectation that the function—the useful activity—of the organ in question will be similar to that of a homologous organ in another animal, whereas it has already been investigated. This is another basis for forming a hypothesis.

Again, the belief in common ancestry leads to an expectation that any particular function will be performed in essentially the same way in all organisms where it exists. I want to emphasize that although arguments of this kind are invaluable, and are used continuously, whether consciously or not, by biologists, their use is in no sense a substitute for evidence, and they are, to say, they are not reliable enough for us to base our conclusions on them unless we can do so to provide evidence, or evidence, but there is always a danger that they may lead us astray.

It is not merely a hypothetical possibility that harm could be done by such a reliance on generalizations. As I have said, incidentally, I have looked a little into the development, over the last hundred years or more, of my own field of research, the elucidation of muscle contraction. I have been astonished to find how often progress has been led by over-confident application of the idea that "contraction" must work in the same way in all the many organs and organisms where it is found.

reinforced by a number of factors which caused microscopy in general to be undervalued, and the result was not merely that the striations were completely disregarded for about 50 years, but that a large body of first-rate microscopic work of the late nineteenth century was actually forgotten.

How wrong it was to disregard this work is shown by the fact that the key points that were mentioned in the understanding of muscle that has taken place since 1953—the date of the first suggestion of a sliding-filament process—was set going by reinvestigations of the striations with both light and electron microscopy, and many of the key points that were established at that time turned out to be re-discoveries of things that had been common knowledge in about 1880. The value of a clue is in suggesting lines to follow up; in this case, the clue—the presumed similarity between striated and unstriated muscle—did turn out to be right, and was allowed to prevent a valuable type of investigation from being carried out.

Another example from my own field of work is the following. Any movement of the voluntary, striated muscle of the arm is produced in a solution with an appropriate raised concentration of potassium ions. In most muscles of, say, a frog, this concentration has a quick onset and lasts less than a minute, but in the muscle of the human hand it is maintained for hours, which he uses when clasping the handle of a tool, or when writing, or when playing the piano.

This was well investigated in the 1920s, and the plausible suggestion was made that frog muscles contained a special type of muscle fibre, one which produced rapid, shivering movements, while the other produced long-lasting slow contractions that may last for hours.

But at the same time that this discovery of the widespread occurrence of myo-inositol systems was being made, it was also being found that these systems were not only found in muscle, but also in other parts of the body. At least three other types of mechanism were spread out, in the cytoplasm of the cell, in the spindle which moves the chromosomes during mitosis, and in many movements of prokaryotic organisms, which at present is known only in bacteria; and a third, known only in the contractile thread of the ciliate *Vorticella* and its relatives, by which the animal withdraws itself into a defensive movement.

So the supposition that contraction is everywhere of the same nature is not correct. Meanwhile, the application of this principle repeatedly led people astray. For example, it is widely known that the fibres of some muscles, including our own voluntary muscles, are crossed by transverse heads, or striations, while other muscles, including our involuntary muscles, are not striated in this way. These striations are about ten thousand to one inch—and they are easily seen under the light microscope. They were first seen by Leeuwenhoek at the end of the seventeenth century. The principle of uniformity leads one to suppose that the mechanism of contraction is "essentially the same" in both striated and unstriated muscle, and recent work shows that this is certainly true. But from that point it was only a short step to arguing that because unstriated muscles contract, therefore the striations cannot play any essential role, and in no good looking at the striation pattern in the hope that it will throw light on the mechanism of contraction.

Not the only basis

This "principle of the uniformity of nature" can be applied in many fields. It is suggested, with contradictory evidence, for example, that autotrophic inorganic and heterotrophic protoplasm are brought about by the same process as the sense that has discovered in recent years that a great variety of animals, in all organisms from protozoa to mammals, contain large amounts of "myosin" and "actin"—the chief proteins of the contractile fibrils of ordinary muscle.

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great surprise when a slow contraction was directly observed by Tanski, in 1956, rather than by dissecting out outer nerve to muscle from a frog and stimulating it with a current from the ordinary laboratory power source. It was, in fact, exactly right, and it was only a few years later that it was shown that these slow contractions are caused by the muscle fibres which, under the microscope that I have mentioned, are called "intermediate" fibres.

It might be thought that I have mentioned these fibres in an enthusiastic application of a theory of biological evolution, but that is not the case. I mention them rather as a warning, not as a recommendation, of the danger of putting too much emphasis on any aspect of evolution theory, and of assuming that all living things are descended from a common ancestor, and of assuming that the other aspect of evolution, the process which generated the extraordinary diversity that exists among the species, is the result of a series of small, gradual changes, and of assuming that the result would be negative.

Then Lee & Yung, in a purely theoretical paper, suggested that a certain experimental result could be easily explained if partly were not being conserved, and they pointed out that none of the existing evidence for conservation was relevant to weak interactions. Within a few months of the appearance of this paper, numerous demonstrations of non-conservation were published.

Blackett mentions another point that is reminiscent of my birding-collecting, which is that any theoretical prediction of a certain experimental result could be easily explained if partly were not being conserved, and they pointed out that none of the existing evidence for conservation was relevant to weak interactions. Within a few months of the appearance of this paper, numerous demonstrations of non-conservation were published.

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Science's independence is threatened by being used for political ends

There are no doubts in all that there have been enormous numbers of cases where not only biologists of all kinds but chemists and physicists have been put on to a false trail, or have disregarded some important observation, because of overconfidence in current generalizations.

An example from the nineteenth-century physics, which had serious repercussions on the theory of evolution, was Kelvin's calculation of the age of the earth, based on the rate at which it would cool down from a supposed original molten state. The result did not last nearly enough time for the repeated cycles of erosion, sedimentation, and upheaval that geologists infer from examination of the rocks.

Rather than admit the possibility that the basis of his argument was false, Kelvin asserted that the geologists had got their time scales 10 times too long; in fact, of course, it was Kelvin who was wrong because he did not know that the temperature of the earth was maintained by radioactivity. It was not until some 30 years after the controversy does not exonerate Kelvin; his argument was based on the premise that the whole of physics was above criticism, and that it was safe to ignore the possibility that there might exist other sources of heat which had not been identified in the laboratory.

As regards twentieth-century physics, I would not dare to say anything on my own responsibility, but a relevant example was described by Patrick Blackett in his Rutherford Memorial Lecture (Proc. Roy. Soc. A 251, 293 1955), with corrections in Physics Today, 14, no. 2, p.86 (1961). This was that the discovery of the non-conservation of parity in weak interactions was generated by the extraordinary diversity that exists among the species, and of assuming that the result would be negative.

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merely that he is descended from Adam, but that the change had been effected by the impersonal and cruel process of natural selection.

The importance of the debate was not so much the actual question whether evolution by natural selection had occurred, as whether an issue such as evolution should be decided on the basis of arguments and what is happening at the present time, to modify existing species of animal, and plants.

This was true both of that most famous of all events at meetings of the British Association, the confrontation between T. H. Huxley and the Bishop of Oxford in 1860 and also of the later controversy between T. H. Huxley and Gladstone that I mentioned above. As I said earlier, these battles were won, and for nearly a century it has been taken for granted that the question on which scientific evidence can be obtained should be decided on that evidence.

Similar expressions filled the correspondence columns of the Times for a few months after the publication of the book by the late Sir Cyril Burt in his old age. These remarks took me by surprise: I had supposed educated opinion in this country to have reached the level at which it could distinguish between questions to be decided on evidence, and questions of the policy that should be adopted in the light of the facts.

There is one big difference between this debate and the inheritance of ability and the debate on evolution. The event which forced the public to take evolution seriously was the publication of Darwin's Origin of Species in 1859. Darwin had been a dissident for some time, but his dissent, for example, if it is true that differences of ability are to a large extent inherited, then preaching that they are not inherited, is to preach a doctrine against the less-well-endowed which will never be fulfilled, and that section of the population will naturally conclude that they are being unjustly excluded from the more interesting features of the routine under which they live.

But from a wider viewpoint, I regard any such attempt to deflect scientific conclusions for political or social motives, however well-intentioned, as a betrayal of science. Science has a claim to be listened to only in so far as its pronouncements are firmly based on evidence about what actually happens in the world we live in, and are independent of what we wish or hope. Any application of a scientific conclusion to a particular case is an argument that that conclusion is already biased by the wishes of those who are responsible for its application.

This independence of science, which we must cherish, is under attack nowadays not only in the content of its pronouncements, but in many attempts are being made to use science as a lever for political or ideological purposes. One of the most depressing events of recent years—especially to me personally—has been the appearance of a general of Unesco—the Unesco's boy, who has been speaking of, for many attempts are being made to use science as a lever for political or ideological purposes. One of the most depressing events of recent years—especially to me personally—has been the appearance of a general of Unesco—the Unesco's boy, who has been speaking of, for many attempts are being made to use science as a lever for political or ideological purposes.

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Fact and policy

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Human rights

The appropriate reaction therefore comes from us as not as scientists but as citizens; if we wish to join in some corporate protest, it should be through a body whose prime concern is human rights, and not through one whose prime concern is with science. If a scientific body publicly takes a step whose justification is political and not scientific, it will lose its right to be listened to on the basis of the evidence and should not be influenced by the jury's opinion of the seriousness of the crime of which the prisoner is accused.

Ethical questions come in at the next stage: in a court of law, when sentence is passed, or in public affairs generally, when a policy for action is discussed. Policy may be limited according to what appears practicable, but its direction is set not by what we know but by what we wish for. The single-minded politician can twist any piece of information, whether true or false, so as to support his own case. The racist can twist any piece of information to support his own case. The single-minded politician can twist any piece of information, whether true or false, so as to support his own case.

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in the USSR. This was expressed in a memorandum from the Council of the Institute of Physics, which was issued in the July issue of Physics Bulletin.

The Council of the Institute of Physics urged the Royal Society to intercede to protect the Academy of Sciences in the USSR, but to enforce that protest by the threat of terminating their programme of exchanging visits of scientists between the two countries. The Royal Society declined to take any such action, and I am glad that they were right. These victims of oppression, not only in the USSR, Czechoslovakia and other Iron Curtain countries but also in some South American countries and elsewhere, are suffering not for their scientific opinions but for political acts unrelated to the fact that they are scientists.

The position is totally different, for example, from what it was in the era when scientists in the USSR were dominated by Lysenko and his followers, and the scientific career of anyone who admitted the evidence for Mendelian genetics was doomed. In that situation, where individual scientists in their capacity as scientists, and scientific organizations as such, had full justification in bringing pressure to bear on the USSR to restore freedom of scientific thought and investigation.

The climax of this affair was the notorious session of the Academy of Agricultural Sciences in August 1948, which was endorsed by the Academy of Sciences of the Soviet Union itself, and which re-established Lysenko's dominating position and initiated a drastic purge from universities and research institutes of the equivalent of the position in relation to the hereditarianism of human ability, who regard the assumption of equal inherited aptitude as something which is not required by scientific evidence to establish it, and which it is, in fact, to be decided on evidence, and questions of the policy that should be adopted in the light of the facts.

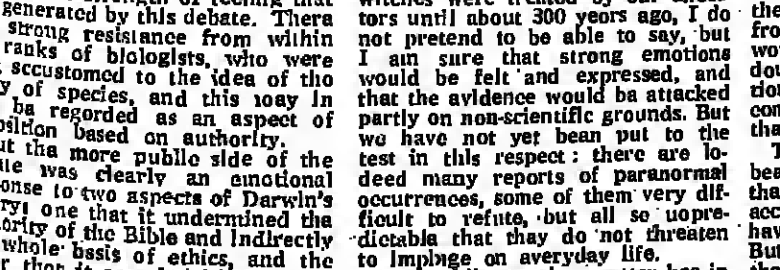
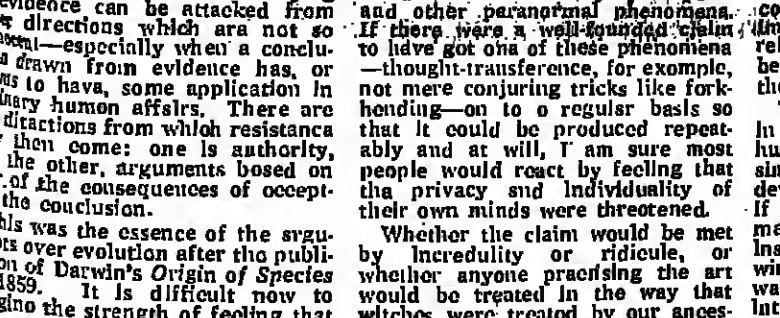
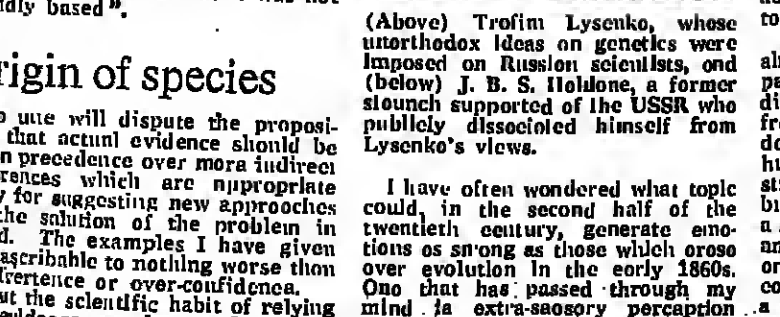
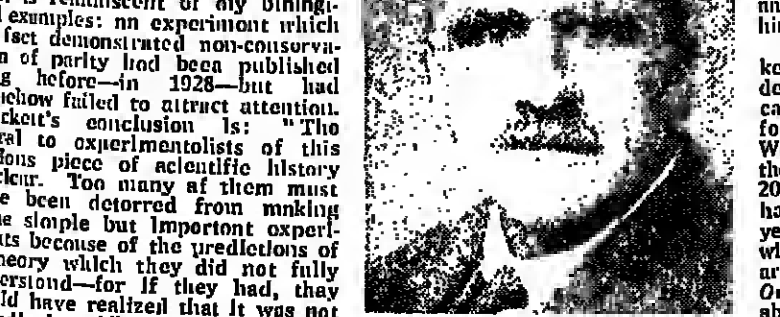
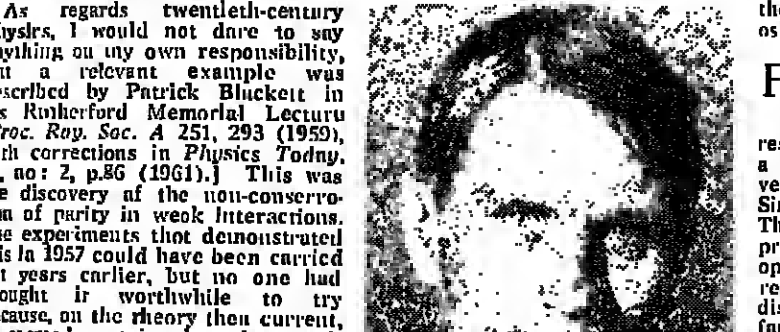
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Grants

The Standing Conference of University Appointments Services (SCUAS) is holding its thirteenth national conference at the University of Hull from September 5-8.

Birmingham

Centre for Urban and Regional Studies Dr. A. Kaur—£25,854 from the Department of the Environment for improving the housing opportunities of ethnic minorities in the local authority sector.

Dundee

Biological Sciences—Professor W. D. P. Stewart—£36,875 from the NERC for his work on the biology of Scottish freshwater lochs.

get on September 6 at the Cafe Royal Regent Street. Fee: £40 plus VAT. Further information from Gay Jordan, Senior Careers Officer, The Certified Accountants Educational Trust, 9 Mount House, Museum Street, London WC1A 1JT.

Edinburgh

Social Administration—Professor J. C. Spence—£22,000 from the Cratmillar Festival Society for continued support of research work in connection with the BCC programme of pilot schemes and studies to combat poverty.

of chemical waste" is a one-day course to be run on September 14 at the Polytechnic of Central London. It is intended for the chemical industry and organizations concerned with the treatment and disposal of waste.

The International Scientific Film Association Congress and Festival 1977 will be held in Venice from September 18-24. Application forms and further details of the congress and festival can be obtained from Miss Flora Thomas, at TRF1 Shell Centre, London SW1 7NA.

Leeds

Plant Sciences—Professor R. W. Woodhouse—£25,000 from the Rank Prize Funds over three years for a pilot study towards extending and increasing the productivity of cool-temperate grasslands.

College London. The discussion will centre around a series of papers prepared by Mr Russ Iversh of CRIIL Laboratories on this subject. Enquiries to Dr J. Lewis, Department of mechanical engineering, ICL, Tower Street, London WC1.

Effective Management of plant processing projects: a seminar organized by the Control Data Institute will be held at the Gloucester Hotel, London from September 19-21. Further information from Trevor Burnard, CII, 77 Wells Street, London W1.

Liverpool

Child health—Professor F. Harris—£28,000 from the RVC, Merseyside, in support of a research into material and methods for in vivo measurements by X-ray spectroscopy.

Appointments

Heriot-Watt Research fellow H. Low (Chemistry) Assistant in Language: H. Roll (Geology). Members of Coun: J. G. White (three years), Sir Herbert Brecht (reappointed for three years), The Hon the Lord Balerno of Gairloch (three years), Professor J. G. Gray, Professor S. Mann Feather, Councillor Peter White.

Polytechnics

North-East London Polytechnic Press officer: Gillian Windsor.

Newcastle

Neurology—Professor J. N. Wainwright—£16,277 from the Muscular Dystrophy Group for one year from Oct 1977, for research into neuromuscular diseases.

Noticeboard is compiled by Patricia Santinelli and Mila Goldie

Open University programmes September 3 to September 9

Table listing Open University programmes from Saturday September 3 to Monday September 5. Columns include date, programme name, and credits.

Advertisement for 'Education, Engineers & Manufacturing Industry' published by the British Association for the Advancement of Science. Includes contact information for The Information Officer at The University of Aston.

Sunday September 4

Table listing Sunday September 4 programmes. Columns include time, programme name, and credits.

Tuesday September 6

Table listing Tuesday September 6 programmes. Columns include time, programme name, and credits.

Monday September 5

Table listing Monday September 5 programmes. Columns include time, programme name, and credits.

Wednesday September 7

Table listing Wednesday September 7 programmes. Columns include time, programme name, and credits.

North American news

Medical schools resist 'overseas' influx

from Michael Binyon WASHINGTON America's leading medical schools have begun a campaign of defiance against the Government that could lead to substantial financial penalties. They are refusing to involve normal admissions criteria and admit a quota of students transferring from foreign medical schools.

Universities

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Sunday September 4

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Tuesday September 6

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Voting with their feet

Fay Haussman on why Brazil's middle-class students have taken to the streets after nearly a decade of quiet

The University of Brasilia has reopened for the new semester with armed police on campus. It remains to be seen whether this military presence will in fact "guarantee the normal course of academic activities whether it will merely trigger a continuation of the wide-scale student unrest in Brasilia which culminated in nationwide demonstrations just before the July elections.

A wave of student protests, surprising everyone, has been swelling on Brazil's university campuses since the beginning of the year. In nearly every major Brazilian city there are demands for more control over the university system. Another complaint is that even in the smaller cities the quality of education is declining.

Because of the complexity of the issue, the measure will not effectively come into force until the 1978-79 academic year. Meanwhile, Congress is to hold hearings on the issue when it reconvenes next month.

Drugs course for inmates

Prisoners in San Quentin can earn part of a degree by learning about drug abuse under a new programme run by the neighbouring University of California at San Francisco. The course, "The Pharmacology of Drug Abuse", is designed for hardcore addicts and others. Taught by graduate and post-graduate students from the university, it carries academic credit towards a degree, and emphasizes an objective approach to drug abuse.

Race dispute simmers on

A new round has started in the marathon battle between the Federal Government and the State of Maryland over the desegregation of Maryland's colleges and universities. The State has refused to allow Washington to cut off all government money from Maryland, as the Department of Health, Education and Welfare originally wanted to do.

Retirement at 70 plan

A Bill in Congress to make it illegal for universities to force employees to retire before the age of 70 has set the academic world on edge. However, university officials and leaders have maintained a discreet public silence on this publicising proposal.

West Germany

New campus heralds end of era

The expansion phase of West German higher education is coming to an end. The new technological university at Hamburg which does not offer any technological subjects except marine engineering. It will complement the existing University of Hamburg which does not offer any technological subjects except marine engineering.

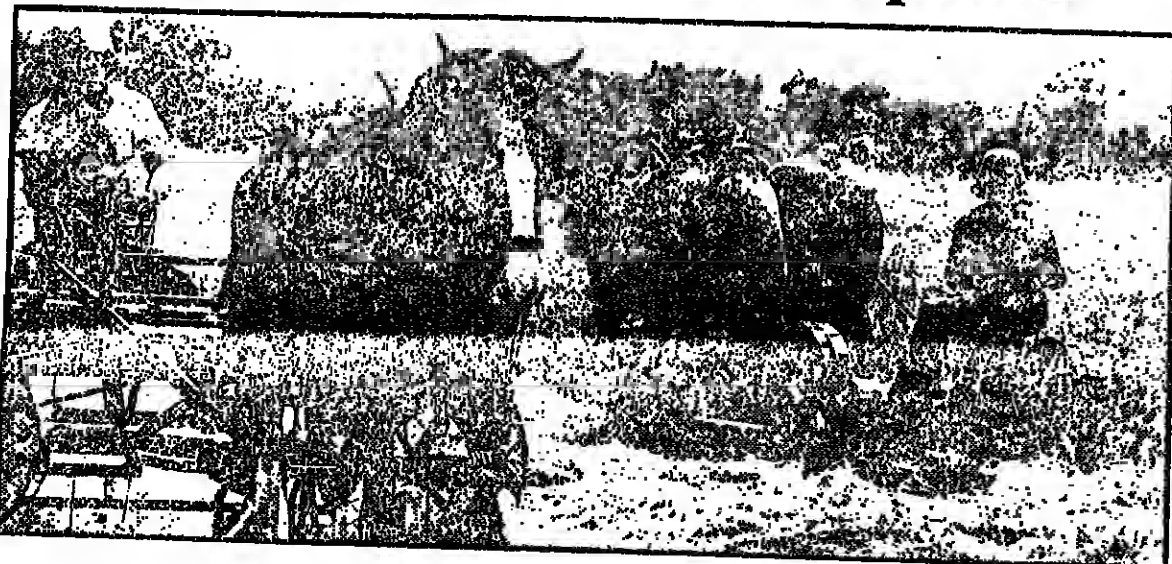
Israel

Further steep increase in tuition fees from our correspondent JERUSALEM Maximum tuition fees in the universities will increase between 30 and 40 per cent in 1977-78 compared with 1976-77, with maximum fees rising by 83 per cent and average fees by about 70 per cent compared with the previous year.

However, relatively few students—those whose fees are paid in whole or part by Government ministries or as the result of wage agreements between employer and employees—will pay the full fee of 6,350 Israeli pounds (about £73). The vast majority will pay 5,350 Israeli pounds which means an increase of about 26 per cent for some and 8.5 per cent for others.

The students appear to be satisfied with the new system. The universities, like the Government, would have preferred higher fees. The new Ministry of Education and Culture has declared himself in favour of graded tuition fees in universities. It remains to be seen whether he will attempt to introduce such a system in the future.

A power within a world of power



For media purposes groups such as farm workers "either cease to exist or are persistently misrepresented".

The Media are American by Jeremy Tunstall... ISBN 0 09 460260 3 and 461810 1

Until quite recently research on mass communication was dominated by the question "Who says what, to whom and with what effects?"

Then McLuhan taught us in mild "how" questions to these we were already asking. Strengthened by some distinguished anthropological work on myth, symbolism and the elementary structures of meaning

Even in this revised form, however, the approach and the work that resulted from it were oddly limited and obstructed. "Who says what, to whom, how and with what effects" was an improvement on the earlier question in that it did direct attention to the design of the ideological world of which in modern societies mass communication is prescriptively the main architect.

It is this gap that contemporary research on mass communication, well represented by these three books, seeks to fill. The new effort is to understand mass communication as a structure of power, control, and a world of power.

Jeremy Tunstall traces the way in which commercial opportunism has enabled a handful of British, French and American newspapers to define news for two-thirds of the globe, and the way in which the enormous domestic economic strength of American companies invade and conquer the communication markets of Latin America, Africa and much of Asia.

the ability to sell cheap to those who cannot afford to buy dear is an economic power which gives direct access to cultural power. Philo and Behrrell remind us that the overt ideological conflict in 1936 and go on to reveal a more identical overt contemporary ideological conflict which they suggest can be understood only by assuming that the BBC is itself a party in conflict not an impartial recorder and presenter of it.

In the new media sociology analysis starts, then, with the economic and political contexts and connections and which power to communicate is appropriated and established. The role of the technologies of mass communication and their funding in shaping specific inequalities of communication is examined. The internal and external social relations of media systems are more thoroughly explored.

Tunstall documents the ways in which American communication empires were constructed through exploitation of the marginally and dreams of non-English speaking American immigrants. Essays by Elliott, Smith and Golding in Mass Communication and Society examine the drive towards professionalization among employees at the managerial levels of the communication industry and show it to be part of a communication to determine who struggle with it, on whom a political economy of mass communication choice, contrives consensus and unites culture.

Again, in how-by-how investigations of the handling of conflict by the mass media, contributors to Trade Unions and the Media suggest just what the values of balance and impartiality and newsworthiness mean for actions of the community dated within the official balanced account of the status quo. For media purposes such groups either cease to exist or are persistently misrepresented—read Tony Marshall's desperate account of the media's treatment of the "racial organization" of selective presentation of selective perception of the social meaning and effects of most

communication. And research selective presentation not as a merely cultural process but in terms of political, economic and technological imperatives as well. Crudely advanced, Marxist arguments of this sort would carry little weight—they did not, for example, impress the Annan Committee. But the research and argument reported and gathered in these books is neither crude nor naive. Rather, they constitute the beginning of a formidable reinter-pretation of the social functions of mass communication. Taken together with the brilliant polemical intuitions of Hans Kohnberger and the large literature of meticulous case studies of media performance which specialized research groups such as those at Leicester and Glasgow are building up it is a potent revelation that now commands our attention. Especially as, once attended to, the mystery of the media so often turns out to be no mystery at all but an entirely obvious consequence of the patterns of communication which the brilliant polemical intuitions of Hans Kohnberger and the large literature of meticulous case studies of media performance which specialized research groups such as those at Leicester and Glasgow are building up it is a potent revelation that now commands our attention.

One of the cruder attempts to grasp the political economy of the mass media is that of the "media imperialism" thesis. That thesis, introduced by Herbert Schiller in Empire and by Alan Watts in Pictorial Tube Imperialism, sees the general saturation of mass communication systems outside Britain, France and the United States, the products of those metropolitan areas as part and parcel of a liberally determined and deliberately constructed political, economic and military domination.

Tunstall, and Oliver Boyd-Barrett in a chapter in Mass Communication and Society, both address themselves to this thesis and both find it inadequate. Imperialist effects, design but by the natural and perhaps inevitable workings of an international market economy in which many producers are very strong and so far as an imperial design can be discerned in the extent of mass communications technology, and the products of it, are largely British in origin rather than recent American imperialism that matters. By contrast, the modern American-led

Audible wallpaper watching

audience about which comparatively little is known. Gwona Dunn has attempted to remedy this deficit. In a primary school headteacher in whose experience of children's broadcast fellowship investigating the impact of television on pre-school children. She watched them watching television and talked to them about what they had seen; she also talked to their parents and teachers and to the programme makers. The book poses a number of questions about the role that tele-

vision can play in pre-school education at a time when the prospect of any increase in nursery provision has disappeared. Mrs Dunn concludes that it has a lot to offer. If used with care it may have a responsibility for the child, drawn into the world of the television screen, to adopt that "audible" habit of watching television without seeing it. It is not difficult to comprehend. It is not difficult which one group of under-privileged children, whose clothes have been washed in the "win-dow" of a washing machine, when

temporary breakdown affected TV transmission. These children may have something from television, not as what the programme producer intended. And although producers receive deserved praise for their inventiveness and conscientiousness while working under the financial restraints of time and limited resources, the teacher in a number of lapses, she may be in general her observations and interpretations are interesting, albeit on suspects, to a rather limited audience. Recognizing the

implications of her study she justifiably tentatively offers conclusions that can be drawn from the data. She is right to see only a partial use of television as the medium of wider arena, some of her recommendations appear unworkable. It is a pity that she does not want to strip off the need of and old-fashioned habits for decorators to stay in business always with the day.

Philip Abrams

Denis McCaldin

Chronicle

Haydn: Chronicle and Works, Volume III, Haydn in England 1790-1795. Edited by Il. C. Robbins Landon. London: Faber, 1975. £35.00. ISBN 0 500 01164 8

The appearance of volume three of the Haydn Chronicle and Works, Volume III, Haydn in England 1790-1795, is a landmark event in the history of Haydn scholarship. Though it is published "out-of-sequence" as it is the first book in the five-volume series promises well. It is the first fruits of many years' research, and by a happy coincidence, its publication date coincides with the centenary of the original work, the Austrian scholar C. F. Pohl.

Robbins Landon's association with Haydn's music began early. At the age of 21, in the year he graduated from Boston University, he founded the Haydn Society, which started to achieve an overall knowledge of the composer's music. The project collapsed through lack of funds in 1951 but four years later his first book, The Symphonies of Joseph Haydn, appeared and immediately established him as an authority.

This new book is laid out on a generous scale of its 640 pages, just over half are devoted to the chronicle itself. In addition to this essay an odd number of contemporary historical material is specifically related to music. On either side are a number of hand-drawn illustrations, including portraits by Hopper and Hardy as well as some previously unpublished drawings of eighteenth-century London. The second part of the volume is devoted to discussion of Haydn's works relating to the period 1791-1795 categorized according to genre.

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Harmonic change

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The virtue of Samson's study, and why it deserves to be recommended to university teachers of music in the absence of anything better, is that it steers the seeker after atonality towards more composers and precise musical examples. If his book manages to provoke nothing more than recognition of Liszt, Debussy, Ravel (and others) as part-time atonalityists, it will do well enough for the time being; it will at least make it difficult for authority to continue to pretend that the innovations most vividly revealed in the works of Schoenberg and his school are isolated aberrations.

But if the author's choices are worthy, his treatment is not. Too much of his general commentary is nondescript and foggy and his numerical badly organized. He does not know what tonality is fact that anybody does who has tried to write about it. His explanations for nineteenth-century atonality as signifying "passion" and "disruption" are as risible today as they were years ago, and his intellectual insistence that Liszt and Debussy remained tonal composers seems unnecessarily reactionary. One is impressed from time to time by an apt word or quotation, like the description of a dissonant chord in C major as "a little sunny" or "a little blue".

Robbin Maconie

Listeners

Music—Society—Education by Christopher Small. John Calder, £6.95. ISBN 0 7145 3530 3

Now is the time when the arts centres are filling up the programmes for next season, the summer festivals are well under way and the music colleges and art schools have signed on next year's recruits. Into this busy world comes Mr Small's book, questioning the basic assumptions for all this activity.

It is a disturbing reflection that enormous sums of money are set aside to subsidize the arts, hundreds of jobs are made available in orchestras, theatres and broadcasting, yet "for the overwhelming majority art plays no essential part in life; it is a spare-time activity to be engaged in, if at all, when there is nothing more pressing to be done".

But if Samson's thesis does not go far enough, its chronological sequel and companion volume by Arnold Whittall, intended to cover the period from 1920 to the present, does not even begin to move. There can be few aspirations more doomed to frustration in execution than a discussion of musical developments of the past 60 years in terms of tonality: can anyone imagine a parallel, such as a discussion of twentieth-century architecture in terms of the decline of the brick or of twentieth-century accountability in terms of the decline of the quill? Dr Whittall defends an approach that takes no account of the cultural life of the times, the impact of technology, political influence, community or education (e.g. the Bauhaus). His sources are dots on paper, his frame of reference the Curwen sol-fa Modulator.

And what, having picked his way through the stone labyrinth of the author's footnotes, does the reader finally discover? That "the most fertile tension in the [Sibelius] Symphony No. 6 is between the diatonic tonality of D minor and the Durian mode of the key signature". It is a little surprising that the author should be so sure of his ground. There will be few scientists who will think the author for questioning their own creative—sometimes passionate—involvement in their chosen field. Social scientists and psychologists will be particularly inquisitive. Theologians will be quick to point to a long tradition (Isaiah, Paul, Barth) which emphasizes "revealed knowledge". In the whole, everyone with any kind of academic pretension or professional expertise will find something uncomfortable here.

Paradox

Ravel by Roger Nichols. John Calder, £6.95. ISBN 0 7145 3530 3

In Roger Nichols' latest book on a French composer, Ravel proves himself to be an ideal subject for the elegant format of the Master Musicians series. No sense of a quart in a plot pot here, for the author is able to present a musical biography which, in far fewer words than any of the other English books (mostly translations) available, gives a clearly focused and through picture of this elusive personality, as well as a useful analysis of his musical style.

Throughout, sources and references are given so that whoever wants to go further will find no difficulty in picking up the threads. It is also to the book's credit that, while it fulfils the series ideal of a compact summary of essential information and at least a paragraph on all major works, the author still finds time to present some interesting new evidence.

Plants interested in Ravel should find much to fascinate them in the accounts of Ravel's piano playing, deduced from early teachers' reports and from Ravel himself. Especially welcome in this respect are Nichols' analyses of the Ravel's piano works, as deduced from records and piano rolls.

On the analytical side, descriptions of the pieces are incorporated into the biography rather than as separate sections on style. With Ravel's modest but significant output this works well and the reader builds a clear picture of his harmonic and formal preoccupations and development.

Richard Langham Smith

Operatic characters

The Operas of Mozart by William Mann. Cassell, £15.00. ISBN 0 304 29381 4

Leporello, though not always facing up to inconsistencies, his operatic characters (excellent except that the meagre mention of the castro boy to be supplemented later) and Italian comic opera figures are particularly well handled when relating characters to their commedia dell'arte ancestors.

Mr Mann paints operatic characters very persuasively and is at his most informative in explaining, for example, the mythological origins of the Don Giovanni story, or the detailed ramifications of the *Figaro* plot or setting out different versions of an aria.

There is a comprehensive bibliography and well-assembled index. The music examples are beautifully drawn by Giles Hewlett-Cooper, and accurate except that Mann's personal interpretations of appoggiaturas, both written and implied, have been shown without Mozart's original notes for comparison.

Mann's work is often from a foreign tongue, as the reader is on one with a grasp of languages or at least a good set of dictionaries, a basic knowledge of the language of opera, a knowledge of classical musical forms and key progression, and easy access to the complete full scores. A quick read of the relevant chapter half an hour before attending a performance will be a most useful and substantial summary where Mann is at his most perceptive.

Kenneth Mobbs

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Heath Lees

Ethereal philosophy

The Origins of Evil in Hindu Mythology by Wendy Duxler O'Flaherty...

This is the fascination of Hinduism... all the possible solutions are there...

The Devil of Manichean and Judeo-Christian mythology is "self-doubt"...

In her previous books O'Flaherty ranges through Indian mythology with ease and charm...

is also chapter 11 entitled "Retrospect"...

The most unsatisfactory part of the book is its treatment of radiocarbon dates...

It was an excellent idea to bring together in one book the present ideas of archaeologists...

This is probably because the authors see the prehistoric record of Ireland in terms of material artefacts...

This absorbing book is well produced, but there is no page index...

Glyn Daniel

Geoffrey Parrinder

Peru: a Cultural History by Henry F. Dobyns and Paul L. Doughty...

The earlier volumes in this series of Latin American histories have dealt with outstanding reputations...

Unlike earlier authors in the series Professors Dobyns and Doughty are not historians...

The complexity of the subject and strict limitations on space disappoint this reviewer...

Although the book provides reconsiderations of the Incas...

Mexican synthesis

A Course History of Mexico from Hidalgo to Cárdenas, 1805-1840 by Jim Nazari...

During the past few years Jim Nazari, a member of the Centre of Historical Studies at the Colegio de México...

Dobyns has divided his survey into six chapters, each corresponding to one fairly clearly defined stage in Mexico's development...

The standard of each section varies, the least satisfactory being the second which is devoted to the years between independence and the Juárez reform...

Michael P. Cost

Seen from the sierra

of the Great estate or the 1970s, is never dated or explained...

The book's weakness on these matters becomes more apparent in the three chapters on the nineteenth century...

Although the book provides reconsiderations of the Incas...

R.S. Miles

The 'science' of the future?

Evolution and Consciousness: Human Systems in Transition by Eric Jantsch and Conrad H. Waddington...

Waddington's main attention during the last few years has been the study of what might be generally termed human ecology...

Some people may like the warm glow of revelation that inspires Jantsch in his final analysis...

Martin Pollock

Darwin and the art of discovery

The Collected Papers of Charles Darwin, in 2 vols edited by Paul H. Barrett...

Most of Charles Darwin's working life is covered in these two volumes. The longer, more formal papers describe his achievements...

There is no doubt that, isolated Darwin was at Down, his invitations to visit plant-breeders...

Of 157 items, 74 appear for the first time. Of the 80 contributions to Darwin's Chronicle...

Sydney Smith

Among this week's reviewers

Dr. Abrams is professor of Biology at the University of York...

Richard Langhans Smith is lecturer in Music at the University of Lancaster...

of molecular biology at the University of Edinburgh...

Of the longer pieces, many had to come by the following and especially Wolpert...

It is a pity this book appears in two volumes, its scope for information about page contents is cut in half...

Sydney Smith

Stop the world

The Human Quality by Amleto Pinelli Perugini £6.50 and £3.25 ISBN 0 18 021450 0 and 021479 7

This is the story of a deeply concerned person, angry at injustice, appalled by violence and waste, believing in human ability to shape the destiny of the world...

He depicts a future world community, governed by intelligence, concerned, rational people—the new humanists...

It is assumed that the world is now in a unique cultural crisis and that the situation of all its peoples is worse than ever before...

Pauline Marstrand

New Titles from NFER Educational Provision 16-19

Judy Dean and Bruce Choppin This comprehensive review of developments since 1964 in the area of education for 16-19 year-olds deals with two main aspects...

The Changing University:

A Report on the Staff Development in Universities Programme 1972-74 David Warran Piper and Ron Glatter Written by members of the University of London Teaching Methods Unit...

Reform, Reaction and Resources: the 3 Rs of Educational Planning

Miriam E. David Reform in secondary, further and higher education is the subject of this book...

One Year Courses in Colleges and Sixth Forms

Dennis Vincent and Judy Dean This book presents the initial findings of the NFER research project 'Alternatives to the traditional sixth form'...

Educational Assessment

Kertheinz Ingenkamp A critical review of trends in the educational assessment of pupils and students in Europe...

NFER Publishing Company, Darville House, 2 Oxford Road East, Windsor, Berks., SL4 1DF



Battle of Poltava: symbol of illumination, in The Bibliothèque Nationale, Paris. From The Hundred Years War by Alan Lloyd, published by Harvill, MacGibbon at £5.95.

Prehistoric past

Ireland in Prehistory by Michael Herlihy and George Egan Routledge & Kegan Paul, £8.95 ISBN 0 7100 8413 7

Hillforts: Later Prehistoric Earthworks in Britain and Ireland edited by D. W. Harding Academic Press, £24.00 ISBN 0 12 324750 0

It is over a quarter of a century since Dr Joseph Raftery, the present director of the National Museum of Ireland, published his Prehistoric Ireland...

Ireland, north and south, is well supplied with prehistoric archaeologists and those of us who live nearer the continent, or on the continent, are eager to know all we can in modern terms about how distant deposits of the European world, like Ulster, Orkney or Shetland, fared in post-glacial and pre-Roman times...

Perhaps the initial disappointment in reading this book is that we are never moved by the achievement of prehistoric Ireland. Why do the authors not trumpet about the fact that the tombs of the Boyne are among the finest and some of the earliest monuments of prehistoric architecture in the world...

This is probably because the authors see the prehistoric record of Ireland in terms of material artefacts and the technological picture of the past which was taught to them. Both archaeology as University College, Dublin and have wide experience in fieldwork, research and teaching. I expected a great deal from this book: the authors have done well better than they could have done much better. What they have given us is a dull but well-documented account of what is known about prehistoric Ireland. Chapters one to four, dealing with the Stone Age and the collective tombs, are by Herlihy (as

Glyn Daniel

Polytechnics continued

The Polytechnic of North London

Faculty of Social Studies

Head of the Department of Sociology

Applications are invited from persons with good academic qualifications in a field of the Social Sciences for the post of Head of the Department of Sociology. The Department offers a B.Sc. Sociology Honours Degree and has 23 full-time academic staff, including 1 research assistant. The Department is also concerned with the development of Sociology courses elsewhere in the Polytechnic.

The post will be taken up on 1st January 1978, or as soon as possible thereafter. The salary is at the Head of Department Grade V level from £8,289 to £9,105 (including London Allowance).

The closing date for applications is 20th September 1977. Interviews for this post are expected to take place in October 1977.

For further information and application forms, please write to the Secretary, The Polytechnic of North London, Holloway Road N7 8DB.

ULSTER COLLEGE THE NORTHERN IRELAND POLYTECHNIC Faculty of Technology

LECTURER II - CIVIL ENGINEERING STRUCTURAL DESIGN

Salary Scale, £3,744 to £5,885

Applicants must be graduates, who are preferably holders of a first class honours degree in civil engineering and possess a minimum of 10 years' experience in structural design and construction. The post is a direct grant institution with an independent income of £1,000,000. It opened in 1971 and now has a student population of some 6,000. It has extensive new purpose built accommodation, including 750 residential places on purpose built campuses. There is a scheme of assistance with removal of furniture, and a relocation scheme which may be entered from September 1978, by obtaining a telephone Whiteboy (0231) 6011, ext. 2245, or by writing to:-

The Recruitment Officer, Ulster College, The Northern Ireland Polytechnic, Berrig Road, Newtownabbey, Co. Antrim BT7 8DB.

CITY OF LONDON THE POLYTECHNIC MANAGEMENT SCIENCE UNIT RESEARCH ASSISTANT THE COURSE OF THE MAHINE

City of London Polytechnic has a research Assistant to assist in the development of a research project in the field of machine design. The holder of the post will be responsible for the design and construction of a machine which will be used for the study of the distribution of forces in a machine. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid.

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Research Posts

THE POLYTECHNIC OF NORTH LONDON FACULTY OF THE HUMANITIES RESEARCH ASSISTANT

The Faculty wishes to appoint a research assistant to assist in the study of the history of the Faculty of the Humanities. The holder of the post will be responsible for the design and construction of a machine which will be used for the study of the distribution of forces in a machine. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid.

SOUTHAMPTON THE UNIVERSITY RESEARCH ASSISTANTSHIP IN SOCIAL SCIENCES

Applications are invited for a research assistantship in the Department of Social Sciences. The holder of the post will be responsible for the design and construction of a machine which will be used for the study of the distribution of forces in a machine. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid.

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BIRMINGHAM THE QUEEN'S COLLEGE

The Queen's College, Birmingham, is seeking applications for a research assistant in the Department of Social Sciences. The holder of the post will be responsible for the design and construction of a machine which will be used for the study of the distribution of forces in a machine. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid.

CHEESHIRE COLLEGE AND ALDERLEY EDUCATION

Applications are invited for a research assistant in the Department of Social Sciences. The holder of the post will be responsible for the design and construction of a machine which will be used for the study of the distribution of forces in a machine. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid.

Overseas

Western Australian Institute of Technology LIBRARY STUDIES HEAD OF DEPARTMENT

The Department fulfils an important role in Western Australia as the only two courses recognised by the Library Association of Australia, a Bachelor of Applied Science and a Graduate Diploma in Library Studies. The Head is expected to provide academic and administrative leadership within the Department and to cultivate links with the community and the profession.

Conditions include: Salary £519,043 or £519,658 or £519,6273 (Salaries quoted at June 1 rate of exchange £S1g. 6390 to AU\$1)

Annual, Long Service and Study Leave. A choice of superannuation is available if required, including a scheme similar to F.S.S.U.

Fares for family plus assistance for removal expenses and accommodation are payable to appointees.

Applications: Detailed applications including a curriculum vitae and names of addresses of three referees should be submitted not later than 30 September 1977 to the Migration Liaison Officer, Western Australian House, 115 Strand, London WC2R 0AJ. A brochure containing full information may be obtained from the above address.

When applying please quote reference HE 5001.

Administration

Melbourne State College VICE PRINCIPAL Applications are invited for the position of Vice Principal at the Melbourne State College, a continuation of the State College of Victoria. The person appointed will be a member of an administrative team consisting of the Principal and three Vice-Principals working under the authority of the College Council. Applicants should have post graduate qualifications or their equivalent in an appropriate academic area and should have extensive experience in tertiary education administration including an involvement with teachers' training. Evidence of a capacity for effective academic administration is essential. The Vice-Principal will have specific responsibilities in the following areas: development of college courses; liaison with employing authorities; development of inter-institutional co-operation; student services; accommodation; in-service and community education courses. The Vice-Principal may also undertake a limited teaching role. The College reserves the right to appoint by invitation. Although the position is tenured, applicants who wish to be appointed for a two year to three year term will be considered. Salary: \$430,182 per annum. Closing date: 17 October 1977. Further information including method of application can be obtained from: The Registrar, Melbourne State College, 757 Swanston St., Carlton, Victoria, 3053. Telephone: 341-8645 or 341-8611.

Courses

LONDON THE UNIVERSITY INSTITUTE OF EDUCATION The Institute of Education (I.E.) is a leading centre for research and training in education. It offers a wide range of courses for teachers, educational administrators and researchers. The courses are available on a part-time basis and are designed to be completed within a few years. The Institute is located in London and has a reputation for high quality education. For more information, contact the Registrar, Institute of Education, 25 Bedford Way, London, W.C.1.

HEALTH SCIENCES-AUSTRALIA

Mr. John Price, Registrar of Lincoln Institute in Melbourne, a college of advanced education training physiotherapists, speech pathologists, occupational therapists, orthoptists, ophthalmic nurses and other health science professions, will be in the United Kingdom from mid to late September.

Persons wishing to discuss employment opportunities at Lincoln should contact Mr. Price, c/o The Victorian Agent-General's Office, Victoria House, Melbourne Place, Strand, London WC2B 4LG.

Colleges and Departments of Art

Leicestershire LOUGHBOROUGH COLLEGE OF ART AND DESIGN PRINCIPAL

(Group 4: £8,916-£9,498)

Applications for this important post are invited from men and women graduates of imagination and energy with wide teaching and other appropriate experience in the field of Art and Design.

Apply (no forms) with full particulars and the names of two referees to Director of Education, County Hall, Loughborough, Leicestershire LE11 3RF, quoting reference FE/C. From whom further particulars may be obtained upon receipt of a fee of £5.00.

General Vacancies

Head of Qualification Studies

The Institute of Marketing wishes to appoint a Head of Qualification Studies who will lead a team responsible for administering the Institute's internationally-recognised qualifications and for ensuring their future development. Candidates should possess a good degree in any field and a post-graduate academic or professional qualification in marketing. The person selected will be a proven educational administrator experienced in curriculum development and have an up-to-date knowledge of the situation and trends in the HE/FE Management Sector. There are currently some 12,000 students registered throughout the world for the Certificate in Marketing and the Diploma in Marketing.

The appointment is based at the Institute's headquarters in Cookham. Salary will depend upon qualifications and experience. Working conditions are excellent, including staff restaurant, contributory pension scheme, Private Patients' Plan Scheme, etc.

Write in first instance, to Director General, Institute of Marketing, Moor Hall, Cookham, Maidenhead, Berkshire SL6 8QH (062 85 24922).

TOMORROW'S READERS WILL SEE TODAY'S NEWS IN SHARPER FOCUS

Available from Newspaper Archive Developments Ltd. ON MICROFILM The Times The Sunday Times (including Magazine) The Times Literary Supplement The Times Educational Supplement The Times Higher Education Supplement Le Monde Le Monde Diplomatique Financial Times Daily Telegraph and Sunday Telegraph (including Magazine) The Economist Straits Times (Singapore) Journal de Genève

also includes references to The Sunday Times, the TES, INDEX and TLS The Times Index (previous volumes form 1780) Literature 1897-1902 (predecessor to The Times Literary Supplement) The Times Literary Supplement 1902-1904 The Times Literary Supplement, Cumulative Index 1902-1909 (under preparation) The Times Literary Supplement, Cumulative Index 1940-1976 (under preparation) Chronology and Index of the Second World War Obituaries from The Times 1861-1970 Obituaries from The Times 1871-1976 (publication Autumn, 1977)

Persons wishing to discuss employment opportunities at Lincoln should contact Mr. Price, c/o The Victorian Agent-General's Office, Victoria House, Melbourne Place, Strand, London WC2B 4LG.

General Vacancies

N. M. Rothschild & Sons Limited Archivist

Applications are invited for the post of Archivist to take charge of their manuscripts at New Court, St. Swithin's Lane, London. Applicants must be graduates with a Diploma in Archival Administration who have had at least five years experience of archival work. An excellent knowledge of German and French will be required and a working knowledge of Yiddish and/or Hebrew would be advantageous.

Salary will be in the range £5,400-£8,000 according to age and experience; non-contributory pension scheme; 4 weeks' annual leave plus public holidays.

Applicants should apply in writing, giving the names of two referees, before 9th September, 1977, to:

P. F. G. Fane, Staff Director, N. M. Rothschild & Sons Limited, New Court, St. Swithin's Lane, London EC4P 4DU.

DIOCESE OF SOUTHWARK DIRECTOR OF TRAINING

Applicants are sought for the post of Diocesan Director of Training. The appointment aims to coordinate the education and training of priests, deacons, laymen, and laywomen in the diocese, to initiate new training, and to organize courses at diocesan, deanery and parish levels. The post will be responsible for the Diocese's Advisory Board for Training, and will act as a vice-chairman of this Board.

The holder of the post should be a graduate with a theological qualification and practical experience of training in the diocese. He/she should be able to integrate theology with practical concerns for the understanding of society. He/she should be able to relate to the various forms of churchmanship and theological emphases in the diocese.

Salary (probationary): £10,000; equivalent to residential Canon with housing provision. If lay: on scale £5,987 to £5,827. Appointment will be for 5 years in first instance, renewable by mutual agreement for 2 years and thereafter annually.

Further details and application forms available by September 30, from: Diocesan Secretary, 24 Lombard Road, SE1 7PB.

LONDON, W.1

Applications are invited for the post of Director of Training in the Diocese of Southwark. The holder of the post will be responsible for the Diocese's Advisory Board for Training, and will act as a vice-chairman of this Board.

The holder of the post should be a graduate with a theological qualification and practical experience of training in the diocese. He/she should be able to integrate theology with practical concerns for the understanding of society. He/she should be able to relate to the various forms of churchmanship and theological emphases in the diocese.

Salary (probationary): £10,000; equivalent to residential Canon with housing provision. If lay: on scale £5,987 to £5,827. Appointment will be for 5 years in first instance, renewable by mutual agreement for 2 years and thereafter annually.

Further details and application forms available by September 30, from: Diocesan Secretary, 24 Lombard Road, SE1 7PB.

Colleges of Education

HEREFORD AND WILMESTER COLLEGE OF EDUCATION DEPARTMENT OF EDUCATION

Applications are invited for the post of Lecturer in the Department of Education. The holder of the post will be responsible for the design and construction of a machine which will be used for the study of the distribution of forces in a machine. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid. The holder of the post will be expected to have a first class honours degree in mechanical engineering and a minimum of 2 years' experience in machine design. The salary is £2,243 a year in the first year of appointment, rising to £2,522 in the second year and £2,801 in the third year. A London Allowance of £1,000 is also paid.

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